**RUBRICS**

Ethics in the Computer Age - Rubric E

| **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- |
| Lifelong Learning (SLO 8)  |
| Very poor and lacking understanding of basic knowledge. | Very basic knowledge base. | Fair amount of knowledge base and shows a basic understanding of theoretical/practical concepts. | Good amount of knowledge base. Good grasp of theoretical/practical foundations. | Outstanding showcase of knowledge and a comprehensive understanding of theoretical/practical foundations. |
| Global Impact (SLO 9)  |
| Very poor and lacking understanding of basic knowledge. | Very basic knowledge base. | Fair amount of knowledge base and shows a basic understanding of theoretical/practical concepts. | Good amount of knowledge base. Good grasp of theoretical/practical foundations. | Outstanding showcase of knowledge and a comprehensive understanding of theoretical/practical foundations. |
| Ethics (SLO 10)  |
| Very poor and lacking understanding of basic knowledge. | Very basic knowledge base. | Fair amount of knowledge base and shows a basic understanding of theoretical/practical concepts. | Good amount of knowledge base. Good grasp of theoretical/practical foundations. | Outstanding showcase of knowledge and a comprehensive understanding of theoretical/practical foundations. |

Knowledge Outcomes – Rubric K

| **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- |
| Computational Theory (SLO 1)  |
| Very poor and lacking understanding of basic knowledge. | Very basic knowledge base. | Fair amount of knowledge base and shows a basic understanding of theoretical/practical concepts. | Good amount of knowledge base. Good grasp of theoretical/practical foundations. | Outstanding showcase of knowledge and a comprehensive understanding of theoretical/practical foundations. |
| Programming (SLO 2)  |
| Very poor and lacking understanding of basic knowledge. | Very basic knowledge base. | Fair amount of knowledge base and shows a basic understanding of theoretical/practical concepts. | Good amount of knowledge base. Good grasp of theoretical/practical foundations. | Outstanding showcase of knowledge and a comprehensive understanding of theoretical/practical foundations. |
| Algorithms (SLO 3)  |
| Very poor and lacking understanding of basic knowledge. | Very basic knowledge base. | Fair amount of knowledge base and shows a basic understanding of theoretical/practical concepts. | Good amount of knowledge base. Good grasp of theoretical/practical foundations. | Outstanding showcase of knowledge and a comprehensive understanding of theoretical/practical foundations. |
| Systems (SLO 4)  |
| Very poor and lacking understanding of basic knowledge. | Very basic knowledge base. | Fair amount of knowledge base and shows a basic understanding of theoretical/practical concepts. | Good amount of knowledge base. Good grasp of theoretical/practical foundations. | Outstanding showcase of knowledge and a comprehensive understanding of theoretical/practical foundations. |

Lifelong Learning – Rubric L

| **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- |
| Recognition and importance of learning new system/tools  |
| No discussion of learning a new system or tool. | System/Tool or other item identified, but no discussion of what was required to learn it. | System/Tool is described but with only a minimal discussion of the issues involved in learning about it | System/Tool is described along with a discussion of the steps taken to learn about it. | System/Tool is described along with a discussion of the steps taken to learn about it. Discussion of how that experience will influence student's approach to learning new things in the future. |
| Short and long-term career plans  |
| No career plan. | Vaguely describes career goals and/or includes no realistic plan to meet them. | Describes career goals after graduation. Includes an adequate plan to meet both long and short term plans.  | Describes realistic career goals after graduation and long-term career aspirations. Includes a good plan to meet these goals and aspirations. | Describes realistic career goals after graduation and long-term career aspirations. Includes a thorough and thoughtful plan to meet these goals and aspirations. |

Software Engineering – Requirements – Rubric R

| **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- |
| Development Process  |
| Does not understand the waterfall development process. Not familiar with the four development phases of Analysis, Design, Implementation, and Test. | Requirement reviews and design reviews are carried out, but the relationship between the reviews and implementation is vague. | Requirement reviews and design reviews are conducted and the relationship between the reviews and implementation is established. | Requirements analysis and design, implementation, and testing are planned using available tools such as Microsoft Project. | Requirement analysis and design, implementation, and testing are clearly planned and reasonable. All requirements defined in the analysis phase can be traceable to the design and the eventual implementation. Produces a rigorous development plan and schedule. |
| Requirements Accuracy  |
| Most requirements are wrong, invalid or not needed. | Many requirements are either not valid or not needed. | Many requirements are valid while some requirements are not fully understood. | Most requirements are a valid need in the software. | Each and every requirement is a valid need in the software. |
| Requirements Documentation  |
| SRS document does not address any of the requirements clearly. | SRS document is sketchy and unclear with regards to many requirements. | SRS document is somewhat clear and addresses many of the requirements in sufficient detail. | SRS document is clear and addresses most of the requirements in sufficient detail. | SRS document is clear, understandable and addresses all the requirements in sufficient detail. |

Software Engineering – Design – Rubric D

| **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- |
| Program Design  |
| Shows virtually no understanding of the use of abstraction mechanisms. | Shows some understanding of the use of abstraction mechanisms. | Understands the process of object-oriented and functional design. | Understands how to write functions that abstract out the essential elements of a function and hide representation and other lower-level issues. | Demonstrates the ability to factor out appropriate abstractions in virtually all situations. |
| Libraries and Frameworks  |
| Does not understand the value of libraries and frameworks. | Understands the value of libraries and frameworks but rarely uses them. | Understands the value of libraries and frameworks and uses them on occasion. | Understands the value of libraries and functions and uses them most of the time. | Understands the value of libraries and functions and uses them whenever possible. |
| Design Patterns  |
| Design patterns are either unknown or used incorrectly. | Some knowledge of design patterns, but makes little use of them. | Analysis and design contains the correct use of design patterns, but only a few patterns are known well enough to be employed. | A large number of design patterns are known and their use is understood to a large extent. | A wide variety of design patterns are correctly used to speed up the design process while creating more reliable and reusable programs. |

Software Engineering – Implementation – Rubric I

| **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- |
| Programming Paradigms  |
| Does not understand concepts from programming paradigms (object oriented and functional). | Does not quite understand concepts from programming paradigms (object oriented and functional). | Understands and uses concepts from programming paradigms (object oriented and functional) some of the time. | Understands and uses concepts from programming paradigms (object oriented and functional) most of the time. | Understands and uses concepts from programming paradigms (object oriented and functional) when appropriate. |
| Functions and Methods  |
| Functions/methods are usually longer than 2 dozen lines of code. | Functions/methods are often longer than 2 dozen lines of code. | Functions/methods are sometimes longer than 2 dozen lines of code. | Functions/methods are generally shorter than 2 dozen lines of code. | Functions/methods are almost never more than 2 dozen lines of code. |
| Testing  |
| Has no concept of testing. Stubs and drivers are not considered in the development stage. Does not use a testing framework. | Understands the concept of testing. Drivers and stubs are used but not well defined. May use a testing framework but only minimally. | Aware of the importance of testing. The use of stubs and drivers is considered before implementation. Uses a testing framework consistently. | Makes testing plans, and testing is integrated with development. Stubs and drivers are written before further implementation. Writes test cases for a testing framework before writing code. | Makes testing plans, and testing is integrated with development. Stubs and drivers are written before further implementation. Writes test cases for a testing framework before writing code. Produces rigorous test reports. |

Team Work – Rubric T

| **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- |
| Participation  |
| Does not provide any ideas when participating in the group and in classroom discussion. Refuses to participate. | Rarely provides useful ideas when participating in the group and in classroom discussion. May refuse to participate. | Sometimes provides useful ideas when participating in the group and in classroom discussion. A satisfactory group member who does what is required. | Usually provides useful ideas when participating in the group and in classroom discussion. | Routinely provides useful ideas when participating in the group and in classroom discussion. |
| Problem-solving  |
| Pretends to solve problems; Causes disruption to others work. | Does not try to solve problems or help others solve problems. Lets others do the work. | Does not suggest or refine solutions, but is willing to try out solutions suggested by others. | Refines solutions suggested by others. | Actively looks for and suggests solutions to problems. |
| Attitude  |
| Is always publicly critical of the project or the work of other members of the group. Has a negative attitude towards every aspect. | Is often publicly critical of the project or the work of other members of the group. Is often negative about the task(s). | Is occasionally publicly critical of the project or the work of other members of the group. Usually has a positive attitude about the task(s). | Is rarely publicly critical of the project or the work of others. Often has a positive attitude about the task(s). | Is never publicly critical of the project or the work of others. Always has a positive attitude about the task(s). |
| Contribution  |
| Does not complete any assigned tasks and uses others to complete his/her work.A dis-interested team member who relies on others to complete the overall project. | Completed most of the individual tasks but did not assist other group members during the project.A passive team member who does not care about the overall project. | Completed individual task and assisted other group members some times during the project.A good team member but needs to try harder to complete the overall project. | Completed most of the assigned tasks. Volunteered to assist group members in finishing the  tasks.A strong group member who tries hard to complete the project. | Completed all assigned tasks. Always assisted other group members in finishing off the tasks.A group leader who works hard to complete the overall project. |
| Interaction  |
| Does not listen to other team members. | Rarely listens to, shares with, and supports the efforts of others. | Often listens to, shares with, and supports the efforts of others. | Usually listens to, shares, with, and supports the efforts of others. | Almost always listens to, shares with, and supports the efforts of others. |

Oral Communication – Rubric O

| **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- |
| Logical organization of thought  |
| Thoughts confused, inconsistent, and not well thought through before speaking. Few if any examples. | Thoughts not well organized. Listeners have difficulty following the speaker's ideas. Main points are unclear. Perhaps some examples, but sometimes not well connected to main points. | Satisfactory thought content. Reasonably well organized. Overall flow of ideas sometimes unclear. Points sometimes not made clearly. Some relevant examples. More would be useful. | Clearly thought through and well organization.  Clear introduction and conclusion. Main points well stated. Coherent flow of ideas. .Good illustrative examples. | Crisply thought though. Well organized. Excellent use of examples to illustrate points.  |
| English Language  |
| Audience unable to follow most of the presentation because of language difficulties. | Many grammatical errors; speaks in incomplete sentences; accent difficult to understand. | Few grammatical errors; but sentences are either incomplete or run on. Accent requires significant effort to understand. Uses few English colloquial expressions. | Few grammatical errors; some sentences are either incomplete or run on; minimal accent; speaks what would normally be considered standard English. | No grammatical errors with exceptional sentence structures; fluent and elegant English. |
| Technical Vocabulary  |
| Seems unsure of the technical vocabulary. | Limited vocabulary with many errors; terms often used incorrectly. | Limited vocabulary; makes errors on a few terms; but overall does not embarrass him/herself technically. | Good use of technical terms but is slightly unsure of certain terms. | Exceptional use of technical terms; explains them well when necessary; uses language that is appropriate to the audience level. |
| Presentation Aids (may be slides or simply white-board diagrams when speaking informally) [Edit Indicator] |
| Slides or diagrams seem to have been cut-and-pasted together; no connection between slides. | Boring and somewhat uninformative slides/diagrams.  | Slides/diagrams seem to contain the right information but no apparent effort made to create truly effective and engaging slides/diagrams. When using slides balance between words and diagrams leans too heavily toward words. Not enough diagrams to illustrate main points. | Generally good set of slides and diagrams. Conveys the main points reasonably well in a traditional way. Adequate diagrams. | Well rehearsed/thought through, informative, creative, and engaging presentation. Diagrams extremely well designed to get points across in intuitive ways.  |
| Audience/listener Interaction  |
| Makes virtually no contact with audience/listeners and seems unaware of audience/listener reactions. | Makes occasional eye contact with audience but seems uninterested in audience/listener reactions. | Makes eye contact with at least a portion of audience/listeners. Does not invite audience/listener participation/reaction. Responds only briefly to questions. Sometimes seems to ignore difficult issues raised by audience/listeners. | Maintains good contact with audience/listeners but doesn't always answer questions in enough detail. Generally acknowledges difficult issues.  | Makes exceptional rapport with audience/listeners. Encourages dialogue. Provides additional material/examples/information when needed. Always clear how well difficult issues have been handled. |
| Audible intelligibility  |
| Barely intelligible or not intelligible. Spoken so softly, with such a difficult-to-understand accent, so quickly, or in some other manner that listeners have an extremely hard time making out what is said. | Difficult to understand what was said, possibly because it was spoken too softly, with a difficult-to-understand accent, too quickly, or in some other way that created an impediment to understanding. | Understandable with some effort. Spoken in a way that put an extra burden on the listener. | Understandable without effort. Spoken in such a way as to be relatively easy to understand but without any apparent effort to make the listener's task easy. | Presented in such a way that it was clear the speaker wished to be sure the audience heard and understood what was being said. Techniques for accomplishing this include dramatic pauses, a conversational speaking style, using a variety of speaking volumes and emotional intensities, particularly clear articulation, body language and appropriate hand and arm gestures, speaking at a pace that allowed each thought to be grasped before proceeding to the next one. |

Written Communication – Rubric W

| **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- |
| Document Organization  |
| No organization. | Little evidence of organization with poor transitions. | Logical organization with few lapses and acceptable transitions. | Logical organization that displays completeness with few lapses in transitions. | Exceptional organization and provides effective transitions. |
| Section Content  |
| Demonstrates no focus on the topic. | Demonstrates insufficient focus on the topic and provides few details. | Maintains focus on the topic and provides adequate if minimal details. | Maintains good focus on the topic and provides sufficient details. | Maintains exceptional focus on the topic and provides ample supporting details. |
| Sentence Structure  |
| Does not follow the rules of English grammar. | Many grammatical errors in each paragraph. | Few grammatical errors but displays limited variety in sentence length and structure. | Few grammatical errors and sentences are appropriately varied in length and structure. | No grammatical errors with exceptional, varied, and appropriate sentence structure. |
| Technical Vocabulary  |
| Virtually no command of technical vocabulary. | Limited use of technical vocabulary and makes many errors. | Limited use of technical vocabulary but makes a few errors. | Appropriate use of technical vocabulary; makes few errors. | Exceptional use of technical vocabulary. |
| Graphical Depictions (may not be relevant to issue of life-long learning)  |
| No graphical depictions. | Very few graphical depictions. | Uses sufficient graphical depictions but not tied to the text and with poor aesthetics. | Appropriate graphical depictions that is tied to the text but with poor aesthetics. | Exceptional depiction of graphics that is also aesthetically pleasing. |